



University of Kota, Kota

B. Sc. II Semester Zoology

B. Sc. II Semester Zoology Exam. May 2019

Z - 201. Paper I: Animal Diversity - I (Arthropoda to Echinodermata)

Unit – I Arthropoda

1. General characters and classification of phylum - Arthropoda up to subclass.
2. Habit, habitat, external features, appendages, digestive, respiratory, circulatory, excretory, reproductive and nervous system and sense organs of Scorpion.
3. Habit, habitat, external features, appendages, digestive, respiratory, circulatory, excretory, reproductive and nervous system and sense organs of Prawn (*Palaemon*).

Unit – II Mollusca

1. General characters and classification phylum - Mollusca up to subclass.
2. Habit, habitat, external features, coelom, general anatomy, digestive, respiratory, circulatory, excretory, reproductive systems, of *Pila*.
3. Habit, habitat, external features, coelom, general anatomy, digestive, respiratory, circulatory, excretory, reproductive systems *Unio*.

Unit – III Echinodermata

1. General characters and classification of phylum-Echinodermata up to subclass.
2. Habit, habitat, symmetry, external features, coelom, general anatomy, Digestive, respiratory, circulatory, excretory, water vascular, reproductive, nervous system and sense organs of star fish (*Asterias*).
3. Habit, habitat, symmetry, external features of *Octopus*.

Unit – IV Larval forms

1. Larval forms of Crustacea.
2. Larval forms of Mollusca.
3. Larval forms of Echinodermata.

Unit – III General

1. Metamorphosis in Insects.
2. Torsion in Gastropoda.
3. Autotomy and regeneration in Echinoderms

Z - 202. Paper II: Cell Biology and Microscopy

Unit-I

- (a) Introduction, Discovery of cell, cell theory, golden period of cytology, prokaryotic and eukaryotic cell characteristics of animal cell.
- (b) Protoplasm-: History, physical characters, colloidal property,
- (c) Chemical composition and Biological characters of protoplasm.

Unit- II

- (a) Structure chemical composition and functions of plasma membrane, endoplasmic reticulum, ribosome, Golgi apparatus, lysosome.
- (b) Mitochondria, cilia and flagella.
- (c) Nucleus and nucleolus.

Unit III

- (a) Mitosis: - cell cycle, mitotic apparatus, centriole aster, and significance.
- (b) Meiosis: - Introduction, meiotic cycle, synapses of chromosomes, crossing over mechanism, Initiation and control of meiosis, significance.
- (c) Gametogenesis: - spermatogenesis and oogenesis.

Unit –IV

- (a) Nucleic Acid: - Chemistry, Molecular model, Duplication, properties and functions of DNA, Types of RNA, Nucleic Acid as Genetic material.
- (b) Nucleic Acid synthesis: -Biosynthesis of DNA and RNA.
- (c) Genetic code, transcription and translation. Role of RNA; Regulation of protein synthesis.

Unit-V

- (a) Microscopy and cytological techniques: - Introduction, types of microscopes.
- (b) Autoradiography.
- (c) Isolation of cell components.

Z - 203. Zoology- Practical

1. Study of animal diversity through museum specimens:-

Arthropoda - *Peripatus*, *Limulus*, spider, *Lepas*, crab, lobster, *Balanus*, *Saculina*, *Lepisma*, moth, butterfly, rice weevil, centipede, millipede, locust, cyclops.

Mollusca - *Chiton*, *Neopilina*, *Patella*, *Aplysia*, *Dentalium*, *Ostrea*, *Teredo*, *Loligo*, *Octopus*, *Nautilus*, *Mytilus*, pearl oyster.

Echinodermata - *Antedon*, *Cucumaria*, *Echinus*, *Astropecten*, *Ophiothrix*, *Holothuria*.

2. Study of sections of organs and developmental stages:

Arthropoda - Larval stages of crustacea and insecta - *Nauplius*, *Zoea*, *Megalopa*, *Mysis*, *Cypris* larva, mosquito larvae and instars of flies. Book lung, trachea, malpighian tubule, pectens (scorpion),

Mollusca - Veliger and glochidium larvae. Sections of *Unio* through different regions, *Unio* gill T.S.

Echinodermata - Pedicellaria, pluteus larva, bipinnaria larva.

3. Demonstration of Dissections: Through Chart / Model / Photograph / CD

- a. Major -
- Palaemon* - digestive and nervous system.
 - Scorpion - digestive, reproductive and nervous system.
 - Pila* - general anatomy, nervous system.
 - Unio* - nervous system.
- b. Minor -
- Palaemon* - hastate plate, appendages, alimentary canal and statocyst.
 - Scorpion - appendages, book lungs.
 - Pila* - gill lamella, radula, osphradium and pallial complex.
 - Unio* - gill lamella and pallial complex.

4. Permanent slide preparation/mounting:

Daphnia, *Cyclops*, crustacean larvae, book lung of scorpion, statocyst and hastate plate of prawn, Mouth parts, wings, appendages and salivary glands of cockroach and wasp gill lamella, radula and osphradium of *Pila*, gill lamella of *Unio*, glochidium larva.

5. Cell Biology

- (1) Cell permeability
- (2) Acetocarmin preparation of mitotic activity
- (3) Demonstration of mitochondria using vital stain.

B.Sc. (Semester-II) - Zoology Practical Exam - 2019

Distribution of Marks

Time 4 Hrs.

Max. Marks – 50

1.	Demonstration of Major Dissections: (Through Chart / Model / Photograph / CD)	06
2.	Demonstration of minor Dissections: (Through Chart / Model / Photograph / CD)	04
3.	Slide Preparation	05
4.	Exercise in Cell biology	05
5.	Spots (10)	20
6.	Record	05
7.	Viva-voce	05
	Total	50
